

Prostate and Renal Cryoablation  
**CASE STUDY REVIEW**

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Briefing Series, Number 1

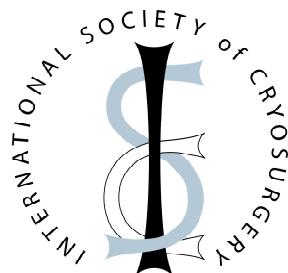
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**Percutaneous Renal Cryoablation  
in a Patient with Previous  
Abdominal Medical History**

*Bruce Lowe, M.D.*

*Urologic Oncology, Northwest Urology Associates*



**International Society of Cryosurgery**



*Dear Reader,*

*The International Society of Cryosurgery is pleased to publish peer-reviewed case studies in urologic applications of cryosurgery.*

*Bruce Lowe, M.D. presents a percutaneous renal cryoablation. Dr. Lowe practices urologic oncology with Northwest Urology Associates (Portland, OR). and held assistant professorships at the University of New Mexico and Oregon Health Sciences University. He served as Urologist, Chief Level, at the VA Hospital in Albuquerque, NM and Portland, OR. Dr. Lowe has been first author in various scientific presentations and has served as a medical journal reviewer. Dr. Lowe's case study represents teamwork between urology and radiology. As renal cryoablation is increasingly recognized for its efficacy and nephron-sparing advantages, CT guidance enables a minimally invasive percutaneous approach when appropriate.*

*Dr. Lowe collaborates with radiologist Kevin G. Semonsen, M.D. Dr. Semonsen works in the Department of Interventional Radiology at Legacy HS, Good Samaritan Hospital (Portland, OR).*

*Special appreciation to Mr. Roger Hutchings for permitting publication of his viewpoint as a patient. We are grateful to Dr. Lowe for providing the case and clinical discussion. Thanks also to Dr. Semonsen for providing the CT scans for Mr. Hutchings' case.*

*We acknowledge Endocare, Inc. (Irvine, CA, USA) for sponsorship of our series of cryoablation case studies.*

*Whether you are an experienced cryosurgeon, or a relative newcomer, I hope you find this case review to be of interest in the possibilities of percutaneous renal cryoablation.*

*Sincerely,*

**Franco Lugnani, MD**  
President, International Society of Cryosurgery

# INTRODUCTION

## **Physician Protocol** **Bruce Lowe, M.D.**

Dr. Lowe highlights aspects of his protocol for percutaneous renal cryoablation.

**Size of lesion:** For percutaneous renal cryoablation, I generally treat tumors less than 3 cm.

**Protecting the bowel:** We've had no bowel dysfunction. We've had a couple of patients where we pushed the bowel out of the way with a saline infusion to make sure we did not traumatize the bowel. Basically, patients do well.

**Imaging:** I work with a radiologist. We decided that it would be in the best interests of our group to have an interventional radiologist involved. This is useful because the radiologist knows how to interpret the CT scan and how to place the probes.

**Freezing technique:** We monitor the probe temperature to ensure that we achieve target temperatures. We do not place external thermocouples but rather we gauge success by the size of the iceball. Our goal is to extend the ice 1 cm beyond the tumor. We typically freeze for 10 minutes. We perform a double freeze with an active thaw for the first freeze, and a passive thaw the second.

**Anesthesia:** At this time, we use general anesthesia. We have considered sedation, but particularly for patients whose lesions require multiple probes, we question the feasibility of sedation.

**Inpatient vs. outpatient:** For the first half dozen cases, we kept patients overnight. We had zero problems, and the patients had no pain. We've now performed about 20 more cases all outpatient. From a patient care standpoint, and from a procedural standpoint, patients do phenomenally well.

**Post-procedure analgesic:** Most of the patients have received absolutely no analgesic post-procedure. The majority of the patients have gone home with just Ibuprofen.

**Biopsy:** Occasionally patients who are referred to us come in with previous biopsies. Otherwise, we biopsy at the time of the procedure.

**Follow-up imaging:** I use CT for follow-up-scans mainly because of the enhancement quality, and follow them fairly closely for the first year.

# CASE STUDY

**Case History: Roger Hutchings** Presented by Bruce Lowe, M.D.

## Urologic History and Presenting Symptoms

Mr. Roger Hutchings was 70 years old when referred for a mass in his left kidney. An area of decreased (hypodense) signal in his left kidney had been detected in a bone scan obtained to monitor his arthritis. A subsequent ultrasound showed a complex cystic mass that a CT scan revealed to mostly contain solid elements.

Bone scan - Oct. 2004

Ultrasound - Nov. 2004

CT - Dec. 16 2004



*Left Renal Mass*

## Medical History

1988 - Mr. Hutchings had a spontaneous bowel rupture due to adenocarcinoma of the colon requiring emergency surgery (partial colectomy, followed by colostomy for several months.) The rupture resulted in multiple complications and created other medical issues, including abscesses.

His primary urologist was not willing to do an open renal procedure on what was presumed to be cancer because of Mr. Hutchings' extensive bowel history. The urologist was aware

that we were performing renal cryo, and in February referred him to us to assess whether he met the criteria. I first saw him on Feb. 18, 2005.

## Other considerations

When Mr. Hutchings was given the option of renal cryoablation, he was pleased about the minimally invasive aspect of the procedure and the potential to avoid another abdominal exploration.

## Treatment

4/12/05

Percutaneous cryo ablation was performed on Mr. Hutchings' left kidney. A biopsy was taken prior to ablation and demonstrated adenocarcinoma. Two 2.4mm p probes were then placed, and a double freeze/thaw cycle was used. The first thaw was active, the second was passive. Target temperature of  $-40^{\circ}$  centigrade was reached at the tumor margin for both cycles.



*Cryoprobe Placement*

Initially patients were admitted to the hospital for a one-night stay because we were just beginning our percutaneous renal program. Mr. Hutchings had no post operative problems and experi-

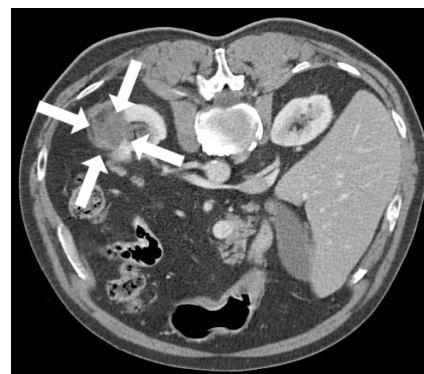
enced no pain. He went home the next day without any medication.



*Iceball*

## Results and follow-up

The biopsy performed at the time of the procedure determined the mass to be adenocarcinoma of the kidney, small cell, low grade. Mr. Hutchings has continued to have no symptoms whatsoever. In all subsequent follow-up the tumor hasn't changed size, but does not enhance during the contrast phases. This is not surprising since a portion of the mass was cystic from the beginning. In my experience such cystic lesions will often not decrease in size, but have not demonstrated enhancement during subsequent imaging studies.



*Early Post-op*

# PHYSICIAN DIALOGUE

## Interview with Bruce Lowe, M.D., Urologic Oncology, Northwest Urology Associates

### How do patients tolerate percutaneous renal cryoablation?

Basically, patients do well. It's almost as non-incidental of a procedure as you could ask for. We've only been performing percutaneous renal cryo for about a year now, so we don't yet have long-term follow-up, but I would say about half the patients have had a substantial reduction in their tumor volumes in that time period. We haven't followed anybody who's had an enhancement.

### Have you had any complications?

In our patient group we've had only one complication, and it wouldn't really be considered a major complication. It was a very early case, and the patient had developed a weakness in the flank with an area of loss of skin sensitivity or numbness. When we looked back at the films, it looked comparable to someone who had a flank incision with an intercostal nerve injury. We then reexamined the CT studies at the time of this procedure. We found that the very distal end of the iceball

was right next to the ribs, so we think that we may have traumatized the intercostal nerve at the rib. He had no pain with it, but with the bulge it was a minor irritation for the patient. However, six months later it resolved, so it was treated as a neuropraxia. That was the only noteworthy problem we experienced.

### Do you have a preference for intraoperative CT over ultrasound?

To be honest, I think we get a more accurate concept of the iceball encompassing the tumor mass with CT guidance than with ultrasound. The problem lies with the interface between the ice and the hyperechoic image. Ultrasound imaging obscures everything beyond that, so it's difficult to know the exact zone of treatment. You don't have that problem to the same extent with CT. It's not as clearly defined as it is with the ultrasound, but it is very obvious where the iceball is. Since you have a multi-layered unidimensional picture, you get a three-dimensional image of the mass, and it's pretty easy to identify if you ablated the lesion or not.

### Are you treating lesions larger than 3 cm?

We recently treated a patient with a 3.5 cm tumor. It was probably the biggest tumor we've done so far. There were strong reasons to use cryoablation because of health issues on the part of the patient. We used four probes. It was a little difficult getting the probes in exactly, but it worked out. We had to perform numerous calculations to determine how and where to place multiple probes, because the iceballs have to include the entire tumor. Tumors rarely fit a precise profile that will fit the probe/iceball size. It would be very nice to have a renal computer modeling program that would map the size of the tumor and calculate a volume adjustment, and thereby suggest the ideal number of probes and where to place them.

*The ideas and opinions expressed herein are strictly those of the interviewee.*

# PATIENT EXPERIENCE

## **My Kidney Cryo**

*By Roger Hutchings*

I am a retired U.S. Navy officer of 22 years, and a veteran of Vietnam. I'm married, I have three children, eight grandchildren and one great grandchild. My wife and I will be spending our retirement as "RV-ers" traveling around the U.S. to visit them all—not to mention all the fishing, since I'm an avid bass fisherman.

Before my kidney tumor was found, my medical history included back surgery many years ago; a ruptured colon that resulted in a temporary colostomy; and over 20 years of body pain with no definitive diagnosis. Over two years ago we moved to Portland, OR from Hawaii. I began seeing a rheumatologist who put me on pain control medication. He also referred me for a CT scan. The scan revealed a kidney tumor. You never expect to hear the word "cancer," and naturally our whole family was concerned. The urologist I saw talked about both partial and complete surgical removal, which further com-

pounded my fear. My wife suggested getting a second opinion. Meanwhile, we used the internet extensively to learn as much as we could.

During our search we discovered Dr. Lowe, and learned that he had been chief of Urology at the VA (Veterans Administration Medical Center) and Chief of the Section of Urologic Oncology at the Oregon Health Sciences University before his Portland practice. Within minutes of meeting him, I felt calm and reassured. He was very good at explaining what we were up against and what cryotherapy was. He said that he had just performed his first kidney patient using a percutaneous approach. Compared to what I'd gone through with my back and colon surgeries, the idea of no major surgery sounded wonderful. I was 100% confident that cryo would kill the tumor, and more internet research affirmed this.

I went in for my procedure on April 12, 2005. I had no fear or worry. When I came out of recovery, there was no pain, no discomfort whatsoever. I had to look at the band-aid to prove I had the cryo. I felt like I could have gotten dressed and gone home, but Dr. Lowe wanted me to stay overnight since he was new to the procedure. The next day at home, I took it easy. After that I transitioned right back into normal activity.

You know how people seem to want to talk about their operations? I've told everyone who would listen how easy this was, and if they're ever up against the same thing to consider this procedure. To me, the fact that cryotherapy is also used to treat prostate cancer is really exciting for men. It makes you wonder what medicine will be like 40 or 50 years from now.



## ISC Overview

The International Society of Cryosurgery was founded in 1974 to promote continuing medical education in the field of cryosurgery from an experimental and clinical point of view. The overall aim of the ISC is to continue to develop and expand membership of the society.

The headquarters of the Society are based in Casa di Cura Salus, Trieste, Italy. The Society corresponds with around 700 members worldwide. Membership is open to anyone who has a professional interest in research and education in the fields of Cryosurgery, Cryobiology, Cryopreservation, and other disciplines related to the use of low temperature in medicine.

ISC: To learn more please visit our website

<http://www.societyofcryosurgery.org>

ISC Officers and Board of Directors:

Please visit our website for a complete listing:

<http://www.societyofcryosurgery.org/Officers.htm>

*The case study presented in here reflects the outcomes for a single physician and patient. Outcomes for other physicians and patients may vary so choice of treatment is best determined between a physician and patient where the risks can be evaluated specific to the individual patient. Cryoablation of the kidney, like all kidney procedures, involves certain risks including damage to renal function and/or the inability to save the kidney. Physicians and patients interested in cryoablation as a treatment for kidney cancer should familiarize themselves with the risks and long term outcomes as documented in recent published clinical data. For a bibliography of cryoablation published data please contact The International Society of Cryosurgery.*

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